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## **RBD-5**

**Rotator Brake Delay Kit**  
**For All Models of Hy-gain**  
**TailTwister and HAM Series Rotators**

# **INSTRUCTION MANUAL**

## **GENERAL DESCRIPTION**

The **RBD-5** consists of a small circuit board that has been assembled and pre-wired at the factory. The **RBD-5** is designed to mount inside all Hy-gain TailTwister® and HAM® series rotator control boxes. The RBD-5 is not compatible and cannot be used with the DCU-1 and DCU-1X rotator controllers. The RBD-5 is also not compatible with the early HAM-M controllers. All mounting hardware required for mounting the RBD-5 is supplied with the kit.

The RBD-5 features a timing circuit designed to provide a 5-second delay for the mechanical brake systems on Hy-gain TailTwister® and HAM® series rotators. This delay enables the rotator to slow to a stop before the brake solenoid re-engages the brake wedge inside the rotator. This prevents the brake system from accidentally damaging the rotator if the brake is engaged before the rotator has come to a stop. This is especially helpful if rotating antennas during weather conditions where high winds are present that would require a little more time for the rotator to slow down.

## **WHAT'S INCLUDED**

Included with this product are the following:

- Installation Sheet
- Assembled & Pre-Wired Circuit Board
- Mounting Hardware Bag

## PRELIMINARIES

Before starting the installation procedure of the RBD-5, you will need a couple of tools. Please gather all of the tools and supplies listed below before starting the installation procedure:

- Medium Flat-Tipped
- #2 Phillips Screwdriver
- 40-50 Watt Soldering Iron with solder
- Wire Strippers
- Small long nose pliers
- Small diagonal wire cutters

**NOTE: DO NOT USE HIGH WATTAGE SOLDERING EQUIPMENT DURING THE INSTALLATION TO PREVENT DAMAGING THE LEVER SWITCHES.**

Inventory all components and items listed in the “**What’s Included**” section of this instruction sheet. There is a parts list in this manual for the Hardware Bag that comes with the kit. This is to ensure that you have received all parts for proper installation of the RBD-5 kit. If any components or parts are missing, please give our Technical Support a call at 1-662-323-9538 and request the missing items. You can also send this request to us via email to the following address: [hy-gain@mfgenterprises.com](mailto:hy-gain@mfgenterprises.com). Please include part numbers of the missing items and your shipping address in the email.

Once all of the proper tools and supplies are at hand, then you can move on to the next section, **Installation Procedure**.

## INSTALLATION PROCEDURE

If you have any problems during the Installation Procedure, please make note of them. This will assist both you and the technician when and if you call us for technical support.

1. Remove all power from the rotator controller. Unplug the AC line cord from the AC wall outlet.
2. Remove the top and bottom covers from the rotator control box.
3. Locate the small transformer inside the control box. Using a medium flat-tipped or Phillips screwdriver, remove one of the screws and nuts that secure the transformer to the chassis. Set these aside as you will not use them in this installation.

4. Insert one (1) of the 6-32 x 1/2" screws supplied with the kit through the mounting tab hole of the transformer. The screw will be protruding to the underside of the chassis.
5. Install one (1) of the #6 lock washers and one (1) of the 6-32 x 3/8" spacers onto the screw. Install the lock washer under the spacer. This will ensure that the spacer will not turn when the screw is tightened. Holding the spacer with the long nose pliers, tighten the screw. **DO NOT OVERTIGHTEN** the screw. Remember, you are tightening a steel screw into an aluminum spacer. The screw does not have to be tightened down real tight. Just snug.
6. Repeat steps 3, 4 and 5 for the other small transformer screw.
7. Install one (1) of the #6 lock washers, one (1) of the 6-32 x 5/8" spacers and one (1) 6-32 x 5/16" screws in the mounting hole labeled **C** in Figure 1. The lock washer should be installed under the screw on top of the circuit board. Tighten the screw. **DO NOT OVERTIGHTEN** the screw. Remember, you are tightening a steel screw into an aluminum spacer.
8. Set the circuit board into the chassis, aligning mounting holes **A** and **B** with the two spacers already installed in steps 3-5. Refer to Figure 1.
9. Install one (1) 6-32 x 5/16" screw and one (1) #6 lock washer into mounting holes **A** and **B** in Figure 1. The screws must go through the top of the circuit board with the lock washer between the screw and top of the circuit board. Tighten the screws into the already mounted spacers. **DO NOT OVERTIGHTEN**. Remember, you are tightening steel screws into aluminum spacers and you can strip the threads.
10. Strip 1/4" of the insulation from the 6" **RED** wire. Solder the **RED** wire to Point **A**. Please refer to Figure 2.
11. Strip 1/4" of the insulation from the 6" **WHITE** wire. Solder the **WHITE** wire to Point **B**. Please refer to Figure 2.
12. Strip 1/4" of the insulation from the 6" **BLACK** wire. Solder the **BLACK** wire to Point **C**. Please refer to Figure 2.
13. Strip 1/4" of the insulation from the 6" **GREEN** wire. Solder the **GREEN** wire to Point **D**. Please refer to Figure 2.
14. Bundle the green, white, black and red wires together using the (4) four white nylon cable ties supplied with the kit. Space them evenly along the length of the wires.

This completes the installation process of the RBD-5 Rotator Brake Delay kit. This is a good time to go back and double-check all steps, making sure that all

hardware is secure and all solder connections are “good, clean” solder connections. After completing this double check procedure, we will move on to the very simple testing phase. However, before moving on, it is strongly suggested that you go through the double check procedure.

## TESTING PROCEDURE

Now that you have double checked the installation, this means that it is time to move on to the testing phase. If everything in the double check procedure went well and all was correct, then the testing phase will work well with no problems.

The rotator need not be connected to the controller during the testing phase.

1. Place the controller into the bottom cover. Do not secure it with the (4) screws yet until we are sure that the Brake Delay kit works. This is just a safety precaution to prevent the customer from accidentally touching the high AC voltages inside the controller.
2. Set the **POWER** switch on the front of the controller to the **OFF** position.
3. Plug the **AC line cord** into a wall outlet that supplies **115VAC**.
4. Set the **POWER** switch on the front of the controller to the **ON** position.
5. Press and hold the **BRAKE** switch. While holding the **BRAKE** switch, press and hold either the **CW** or **CCW** switch. When either the **CW** or **CCW** switch is pressed listen for the small relay on the Brake Delay circuit to “click”. The rotator would start turning, if connected to the controller.
6. Now release both switches at the same time. This activates the brake delay circuit. After about **4.5 to 6 seconds** the small relay inside should “click” again. This indicates the delay timer has timed out and the rotator brake would be engaged inside the rotator, if connected to the controller.
7. If all steps in the Testing Phase worked well, then it is time to re-install the top and bottom covers to the controller. Make sure that you disconnect the controller from the AC wall outlet first before installing the covers.

You have now completed the installation and testing of the Hy-gain RBD-5 Brake Delay kit into your rotator controller.

## PARTS LIST

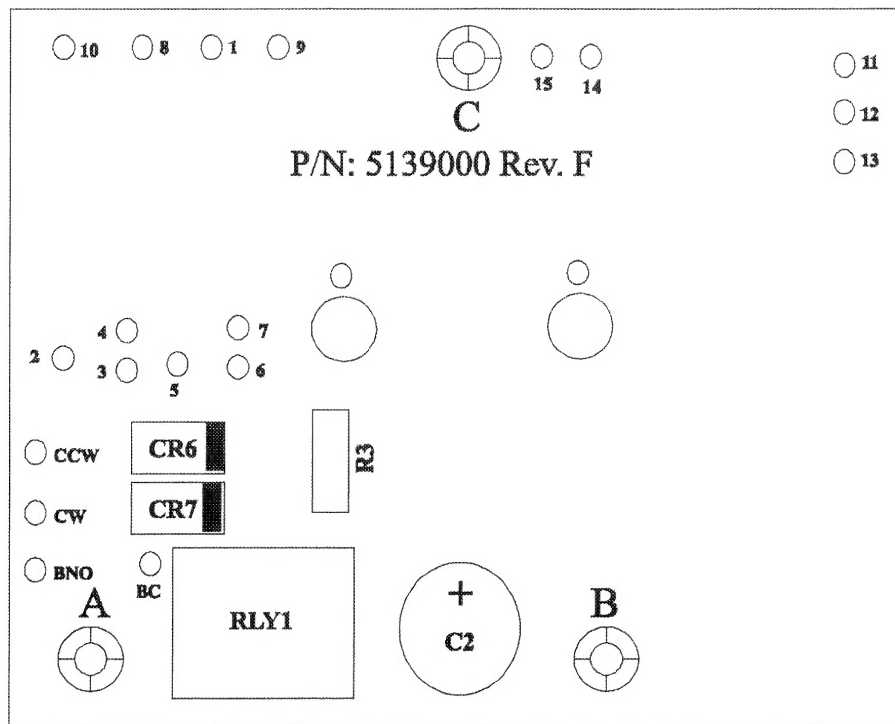
Part Number	Description	Quantity
RBD-5	Assembled & Pre-Wired Circuit Board	1
5139000	Blank Circuit Board	1
408-1012	24DC Relay	1
270-7100-2	1000 $\mu$ f 50V Capacitor	1
203-3100	1000 Ohm, 1W, 5% Resistor	1
300-5408	1N5408 Diode	2
871-2099	Wire, White, 20ga. Stranded	6"
871-2022	Wire, Red, 20ga. Stranded	6"
871-2055	Wire, Green, 20ga. Stranded	6"
871-2000	Wire, Black, 20ga. Stranded	6"
745-2149	Cable Tie, White, Nylon, 4"	4
17-RBD5-1	Hardware Bag	1
656-0312S	Screw, 6-32 x 5/16", Phil, SS	2
656-0250S	Screw, 6-32 x 1/4", Phil, SS	3
565889	#6 L/W, Int. Tooth, SS	5
716C-0375S	Spacer, Hex, Alum. 6-32 x 3/8"	3

## TECHNICAL SUPPORT

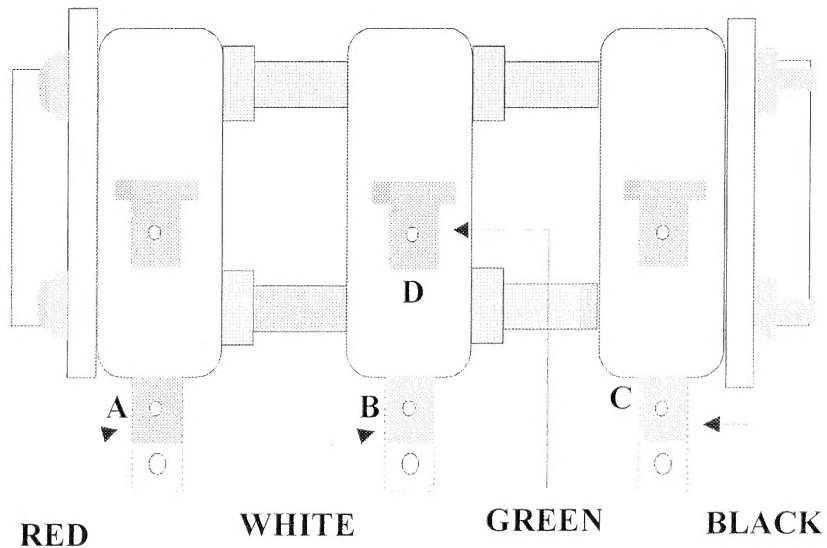
If there are any questions or problems encountered along the way, please call our Technical Support at 1-662-323-9538. You can also send any technical problems about this kit or any other Hy-gain product to us via email to the following address: [hy-gain@mfgenterprises.com](mailto:hy-gain@mfgenterprises.com). Before calling for technical support, please have the following handy to answer any questions that the technician may ask:

- Product Model Number of which you are calling about.
- Model of the Rotator into which the RBD-5 kit is being installed.
- Manual for the product of which you are calling for technical support.
- A description of how the rotator is connected and antenna being used.

## FIGURES AND DIAGRAMS



**Figure 1**  
**PC Board Layout**



**Figure 2**  
**RBD-5 Wiring Reference**  
(Underside View)

## **hy-gain**® LIMITED WARRANTY

**Hy-gain** warrants to the original owner of this product, if manufactured by **hy-gain** and purchased from an authorized dealer or directly from **hy-gain** to be free from defects in material and workmanship for a period of 12 months for rotator products and 24 months for antenna products from the date of purchase provided the following terms of this warranty are satisfied.

1. The purchaser must retain the dated proof-of-purchase (bill of sale, cancelled check, credit card or money order receipt, etc.) describing the product to establish the validity of the warranty claim and submit the original or machine reproduction of such proof-of-purchase to **hy-gain** at the time of warranty service. **hy-gain** shall have the discretion to deny warranty without dated proof-of-purchase. Any evidence of alteration, erasure or forgery shall be cause to void any and all warranty terms immediately.
2. **hy-gain** agrees to repair or replace at **hy-gain's** option without charge to the original owner any defective product under warranty, provided the product is returned postage prepaid to **hy-gain** with a personal check, cashier's check or money order for \$8.00 covering postage and handling.
3. Under no circumstances is **hy-gain** liable for consequential damages to person or property by the use of any **hy-gain** product.
4. Out-of-warranty Service: **hy-gain** will repair any out-of-warranty product provided the unit is shipped prepaid. All repaired units will be shipped COD to the owner. Repair charges will be added to the COD fee unless other arrangements are made.
5. This warranty is given in lieu of any other warranty or implied.
6. **hy-gain** reserves the right to make changes or improvements in design or manufacture without incurring any obligation to install such changes upon any products previously manufactured.
7. All **hy-gain** products to be serviced in-warranty or out-of-warranty should be addressed to **hy-gain, 308 Industrial Park Rd., Starkville, Mississippi 39759, USA**. and must be accompanied by a letter describing the problem in detail along with a copy of the dated proof-of-purchase.
8. This warranty gives you specific rights, and you may also have other rights which vary from state-to-state.